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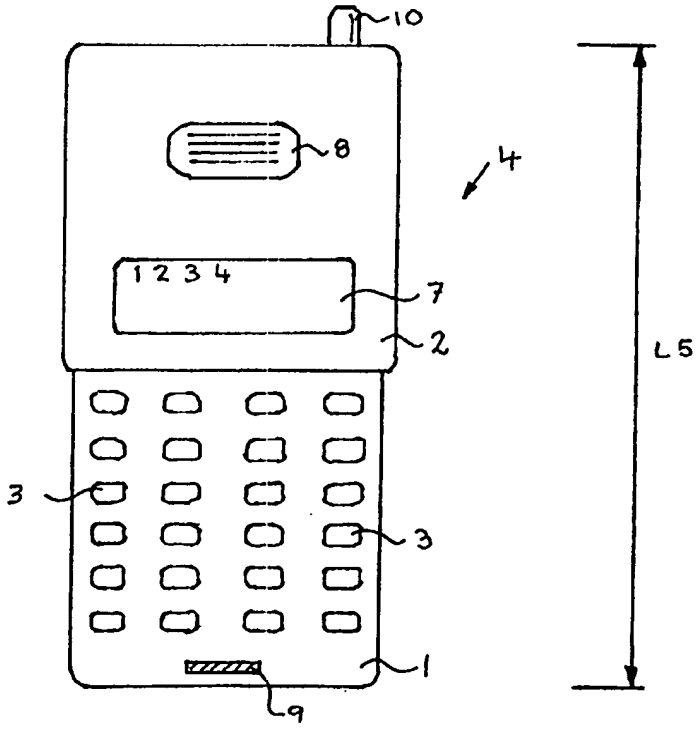
(57) Abstract

The invention relates to improvements in and/or relating to a telephone (4) for making a shortening of the length (L5) of said telephone (4) possible by sliding and/or folding at least one button set part (1) and/or at least one protective housing part (2) to a length (L6) of the telephone not in use, so that said length (L6) is at least 35 % shorter than a length (L5) of the telephone in use. The protective housing part (2) can furthermore protect the buttons (3) against mechanical damage without that the buttons (3) are located too near each other or are too small, so that the operation of these can be facilitated.



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Improvements in and/or relating to a telephone

The mobile telephones of today are constructed smaller and smaller and furthermore lighter and lighter. The batteries also follow that development. Problems arise in this situation by that the microphone then will be situated a too long distance from the mouth of the user during phone calls, since the earphone unit must be located near the ear of the user.

Besides the problem arises that the buttons are situated too cloose to each other so that the telephone tends to be difficult to handle. Futher it is desirable that the buttons can be covered by aid of some type of housing, to reduce the risk that dirt and unintentional actuation of the buttons shall occur.

Some solutions of the problems mentioned above exist today on the market. Such a solution is provided with a lid, which is pivoted to the telephone, which looks like an elongated body having a microphone in the lid and an earphone in the upper part of the body. In this case the lid can be turned over a botton set so that the same is protected. In an open position the lid extends from the lower part of the body so that the microphone can act close to the mouth of the user.

Another embodiment example of an extendable lid also exists. However, this lid is via a sliding function fastened to the body so that it can be pushed over the button set and be pulled apart so that said button set is uncovered and in the same time extended so that the microphone, which is located at the lowest part of the lid, will come closer to the mouth of the user.

However, both these examples have drawbacks. When the lids in the two examples are covering the button sets the telephones are rather long. They will then have the same length as tetephones without a protecting lid. In order to minimize the dimensions of the telephones the size of the buttons set has been increased so much that it will arise problems to operate the same.

It would be desirable to create a telephone which is small when not in use and appropriate big when being used so that the mouth of the user will be close to the microphone and the ear of the user close to the earphone which is equipped with a lid function, without that the button set will be too small. The characterizing features of the invention are stated in the claims enclosed.

Thanks to the invention one has now achieved a surrounding protective housing which is formed as a telescopic device, which in a sliding together position has a minimal extension and during use is slided apart and then has a size where the microphone and earphone unit are close to the mouth and ear of the user. The invention comprises thus mainly two parts which are so matching together that one part can be pushed into the other. In a preferred embodiment example of the invention the one part is bigger than the other, which then can be slided into the bigger part like a telescope. If the earphone part is bigger the button set and the microphone will be located in the the smaller part, why the button set will be covered in the slided together position of the telephone under the housing of the earphone part. If the microphone part should be bigger the button set is located in the the earphone part which then is covered of the bigger earphone part in this case during a slided together position.

Thus, according to the invention one can achieve a protective housing which surrounds a button set so that dirt and unintentional operation cannot reach the buttons. Since the telephone according to the invention is very small in its slided together position, when at least two parts are telescopically pushed together into each other, it can create more space to at least one part for locating the button set. This part can in this case be larger than it would be on a common telephone which is not telescopically slidable and therefore gives a possibility to use bigger buttons having bigger gaps between the same in order to facilitate the operation and minimize the risk for faulty control, which can cost much money for the user. Besides the telephone will be in its pushed together positon much smaller than tele-

phones previously known on the market.

The invention will now be described closer in detail by aid of some preferred embodiment examples in view of the drawings enclosed, in which

Fig. 1 shows a schematical wiev of a first embodiment example of a mobile telephone according to the present invention during a position of use,

Fig. 2 shows a schematical wiev of the first embodiment example in a pushed together position,

Fig. 3 shows a schematical wiev of a second embodiment example of a mobile telephone according to the present invention in a pushed together position,

Fig. 4 shows a schematical wiev of the second embodiment example in a pushed together position and

Fig. 5 shows a side wiev of a third embodiment example of a mobile telephone according to the present invention.

As can be seen more in detail on the drawing in fig. 1 the embodiment example which is illustrated in its using position comprises mainly two parts namely a button set part 1 and a protective housing part 2. The button set part 1 is provided with buttons 3 which can be operated by the user during the functioning of the telephone 4 and which is confirmed on a display 7, said part 1 is so formed that it can be slided or pushed into the protective housing part 2. An earphone part 8 is located in suitable distance from a microphone 9 during use since the length L5, when the telephone 4 is extended, will have a suitable distance between the ear and mouth of the user in achieving the best telephone contact. An antenna 10 of course can be placed either visually or hidden in the telephone 4.

As can be seen from fig. 2 the telephone according to fig. 1 is illustrated in its pushed together resting position, so that the button set part 1 and the buttons 3 lie hidden and

protected from mechanical influence in the protective housing part 2. The distance or length L6 then will be much less than the distance or length L5, which means that the telephone 4 now is much smaller in its rest position than in its using position. This makes that the telephone 4 now can be kept in very small spaces enough protected against agitation.

In fig. 3 an embodiment example of the telephone 4 is illustrated in the using position, where the protective housing part 2 is situated below with the microphone 9 and the display 7. The button set part 1 then is located at the top and is provided with the buttons 3 and the earphone 8.

In fig, 4 the telephone 4 is shown in a slided together position or rest position.

Thus in fig. 1 - 4 there is illustrated two embodiment examples in an using position and in a pushed together resting position. In these embodiment examples the button set part is smaller in order to be hold in the protective housing part 2. This is not necessary in order to use the invention. One can also use different slots or formations on at least some of the parts of the telephone 4 in order to be able to push together the button set part 1 and the protective housing part 2 so that the length L5 can be smaller. The electric components then can be placed in a suitable way so that they give space to push together the telephone 4.

Of course the invention can be used even if one does not use that the protective housing part 2 is totally, partly or not covering. The great advantage then will be that it is possible to push together the telephone so that it can be smaller without that the button set part 1 must be made small.

In fig. 5 it can be seen that the invention also can be used according to the same principle as is shown in fig. 1 - 4 with a button set part 1 and a protective set part 2 with buttons 3 and the display 7 and which is so formed that it can be protected by the protective housing part 2. In the

using position the telephone in fig. 5 will then have a length L5 so that the microphone 9 will be located in a suitable distance from an ear phone 8 to suit against the ear and the mouth of the user. The telephone 4 can then be drawn or folded outwards by aid of e.g. a pivot unit 12 in a direction 15 or be pulled out via a sliding part 14 so that the length L5 is achieved. The telephone can be folded or pushed together to its resting position 1' and/or 1'' in a direction 11 and/or in the direction 13. In this position the telephone will achieve the length L6.

In fig. 2 and 4 the length L6 can be so small as mainly half the length L5, as is stated in fig. 5, if the button set part 1 is totally slided into the protective housing part 2. In this case also the earphone 8, the display 7, the microphone 9 and the buttons 3 can be protected against damage and dirt. You get in this case an outer side of the telephone 4 which is lacking easy damaged parts.

The invention can of course be used even if the buttons 3 are not protected by a protective housing part. The telephone 4 is in any case in its resting position L6 still much smaller than other telephones previously known.

According to the invention the telephone 4 can be folded and/or slided together at at least one position. If this occurs at more than one position the length L6 is decreased further in relation to L5 compared to that the telephone is only folded or slided together at only one position, which makes that the telephone 4 will be extremely small in its resting position.

Claims

1. Arrangement in a mobile telephone, **characterized in** at least one button set part (1) and/or at least protective housing part (2) included in said telephone (4) is foldable or slidable together at at least one position, so that a length (L6) of the telephone not in use is at least 35 % shorter than a length (L5) of the telephone in use.

2. Arrangement according to claim 1, **characterized in** that at least one button set part (1) included in said telephone (4) is protected by at least protective housing part (2).

3. Arrangement according to claim 1 or 2, **characterized in** that at least some part of the buttons (3) on the button set part (1) is protected against mechanical damage.

4. Arrangement according to claim 1, **characterized in** that the telephone (4) in the position (L6) not in use is mainly 50 % shorter than in the position (L5) in use.

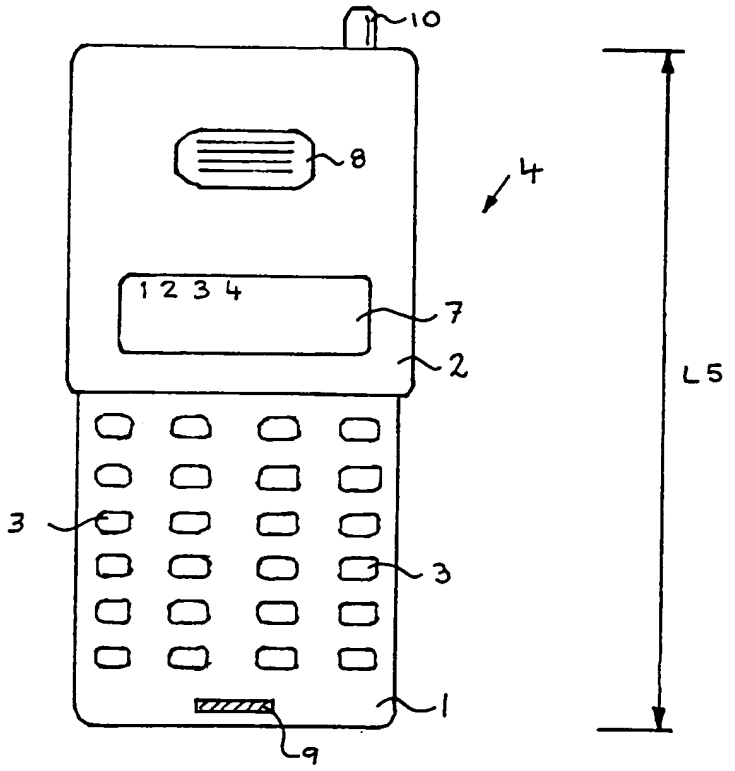

Fig. 1

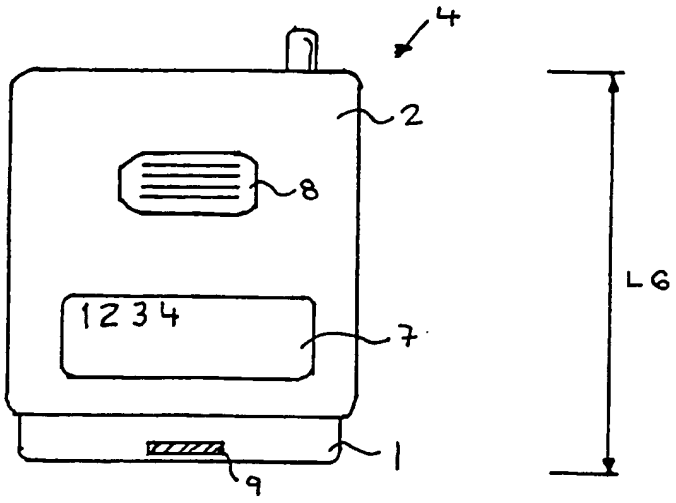

Fig. 2

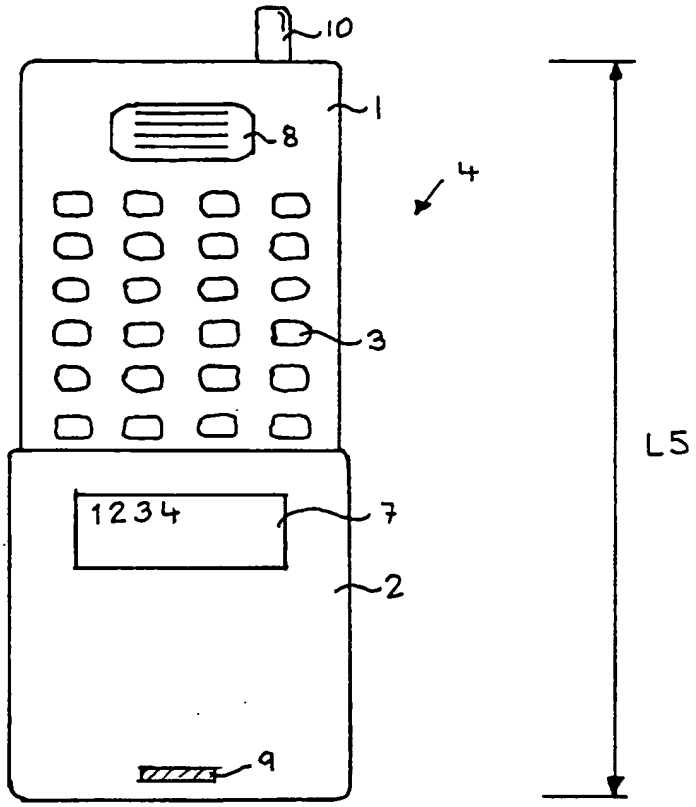

Fig. 3

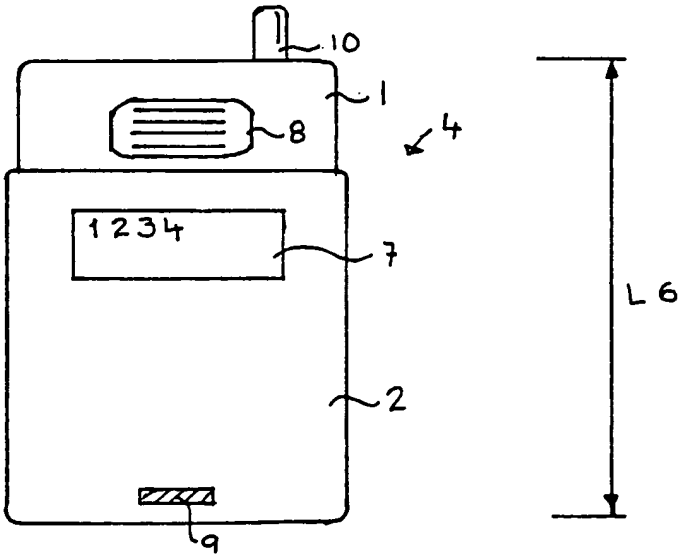

Fig. 4

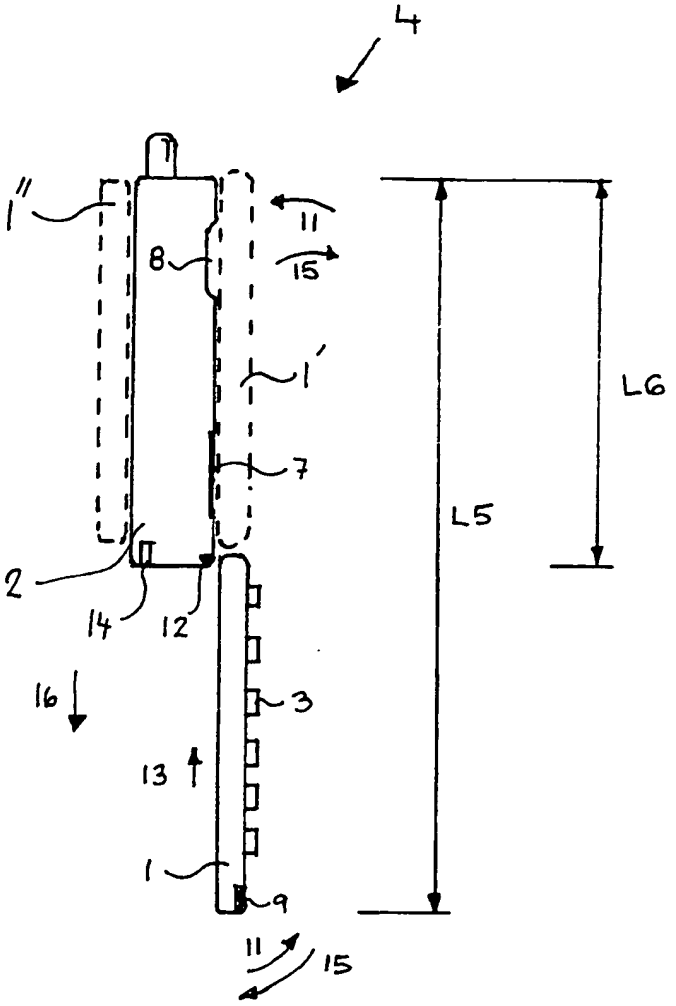

Fig.5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 97/01675

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H04M 1/02
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

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IPC6: H04B, H04M

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0536578 A2 (SIEMENS AKTIENGESELLSCHAFT), 14 April 1993 (14.04.93), figure 1, abstract --	1-4
X	US 5151946 A (NILS E. MARTENSSON), 29 Sept 1992 (29.09.92), figures 1-8, abstract --	1-4
X	EP 0661824 A1 (NEC CORPORATION), 5 July 1995 (05.07.95), figures 4a-5c, abstract --	1-4
X	DE 3323858 A1 (BRANDENSTEIN, ERWIN), 3 January 1985 (03.01.85), figures 1-6, abstract --	1-4

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 4202383 A1 (LOEWE OPTA GMBH), 5 August 1993 (05.08.93), column 2, line 65 - column 3, line 56, figure 1, abstract -- --------	1-4

INTERNATIONAL SEARCH REPORT

Information on patent family members

07/01/98

International application No.
PCT/SE 97/01675

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0536578 A2	14/04/93	NONE	
US 5151946 A	29/09/92	DE 69029440 D,T	05/06/97
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